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RENAL TRANSCATHETER ARTERIAL EMBOLIZATION FOR AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE : REPORT OF TWO CASES

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We report the results of renal transcatheter arterial embolization (renal-TAE) in two patients with autosomal dominant polycystic kidney disease (ADPKD) treated with hemodialysis (HD). A 73-year-old man and a 65-year-old woman on HD visited our department complaining of abdominal fullness, abdominal pain and appetite loss. Abdominal computerized tomography (CT) revealed polycystic kidneys. Both patients underwent renal-TAE. Approximately 1 month later, the symptoms had improved and CT showed decreased cyst volume. These results suggest that renal-TAE is a useful therapy for patients with ADPKD.

(Hinyokika Kiyo 51 : 741-745, 2005)

Key words : ADPKD (autosomal dominant polycystic kidney disease), Renal-TAE, Transcatheter renal arterial embolization, HD (hemodialysis)

INTRODUCTION

Renal transcatheter arterial embolization (renal-TAE) has recently become a treatment option for patients with polycystic kidney, particularly for those with autosomal dominant polycystic kidney disease (ADPKD) being treated by hemodialysis (HD). We report the cases of two patients with ADPKD treated successfully with renal-TAE without serious complications.

CASE 1

A 73-year-old man who was diagnosed with ADPKD in 1991 and had been on HD since 1993 visited our hospital in April 2001, complaining of abdominal fullness and pain. He was anuric. Abdominal computed tomography (CT) revealed a collection of renal and hepatic cysts. The renal cyst volume determined by CT was calculated to be 5,377 ml ($A \times B \times C \times \pi/6$). The patient was hospitalized 6 days later. Renal-TAE was performed on both sides under epidural anesthesia on that same day (Fig. 1).

Renal-TAE technique : The Seldinger technique was used. The number and course of the renal arteries were confirmed by aortography. Selective renal angiography was then performed with a Shepherd's hook catheter, and the feeding arteries of the renal cysts and capsular arteries were confirmed. A coaxial microcatheter was inserted with the use of a guidewire. The pusher introduced titanium microcoils into the peripheral arteries, and several gelatin sponges were injected. Renal angiography was performed to confirm complete interruption of the blood flow.

Postoperative course : The patient had flank pain and fever. The pain was controlled by epidural anesthesia

and nonsteroidal anti-inflammatory drugs (NSAIDs). The fever was treated with NSAIDs and antibiotics. These disappeared within 1 week. No other side effects were observed. The patient was discharged 18 days later.

Follow-up period : Symptoms disappeared within 1 month after the renal-TAE. CT examination performed 5 months after the procedure showed the cyst volume to have decreased considerably (Fig. 2). However, the same symptoms occurred 21 months after the procedure. Renal angiography revealed reopening of the arteries that had been embolized (Fig. 3). A second renal-TAE was performed.

Outcomes of renal-TAE : The cyst volume decreased from 5,377 ml to 3,506 ml by 3 months after the first renal-TAE (Fig. 2). The abdominal circumference had decreased from 86 cm to 78 cm. The contraction rate (post-treatment volume/pre-treatment volume \times 100) was 65.2%. Three months after the second renal-TAE, cyst volume had decreased from 3,990 ml to 2,857 ml, at a contraction rate of 71.6%. There has been no recurrence of abdominal pain and fullness since the second renal-TAE.

CASE 2

A 65-year-old woman in whom ADPKD was diagnosed in 1967 and who had been on HD since 1993 visited our hospital in February 2003 complaining of abdominal fullness and pain. Total renal cyst volume was 6,410 ml. The patient underwent renal-TAE on both sides on approximately 2 weeks later. Although she suffered flank pain and fever, these disappeared within 1 week. The patient was discharged 11 days later. Her original symptoms disappeared within 1 month after the renal-TAE. The cyst CT-determined

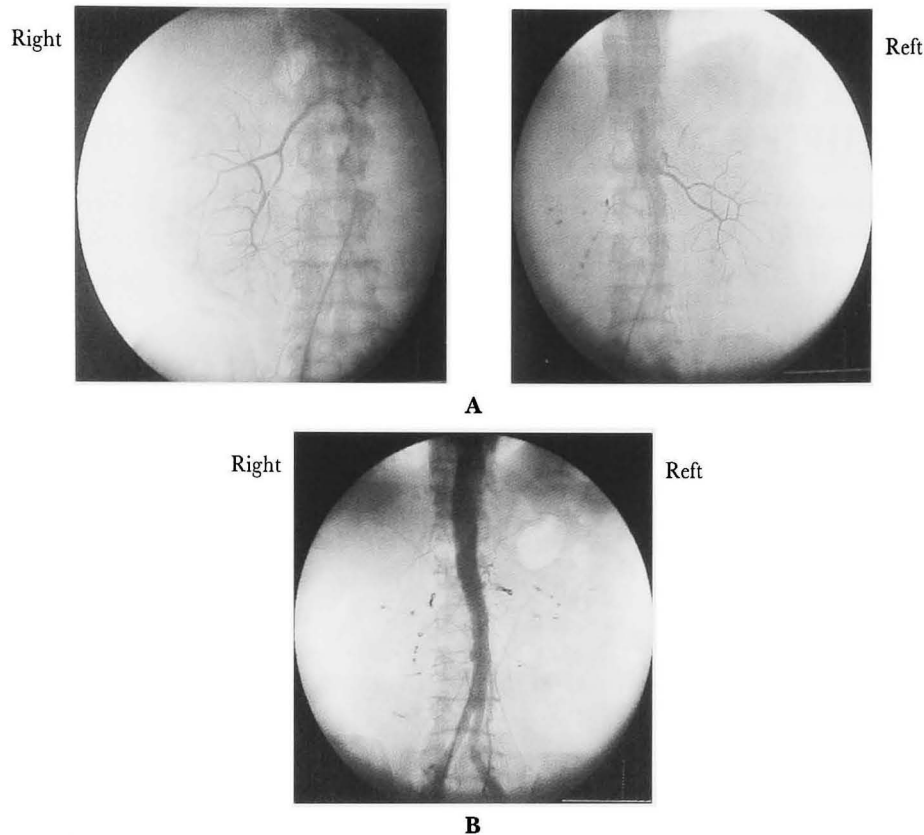


Fig. 1. Angiograms obtained in case 1. A: Selective renal angiogram obtained before the first renal-TAE. B: Angiogram obtained after the first renal-TAE. Ten microcoils were placed in the right peripheral renal arteries, and 7 microcoils were placed in the left peripheral renal arteries. Several gelatin sponges were placed in the arteries on both sides.

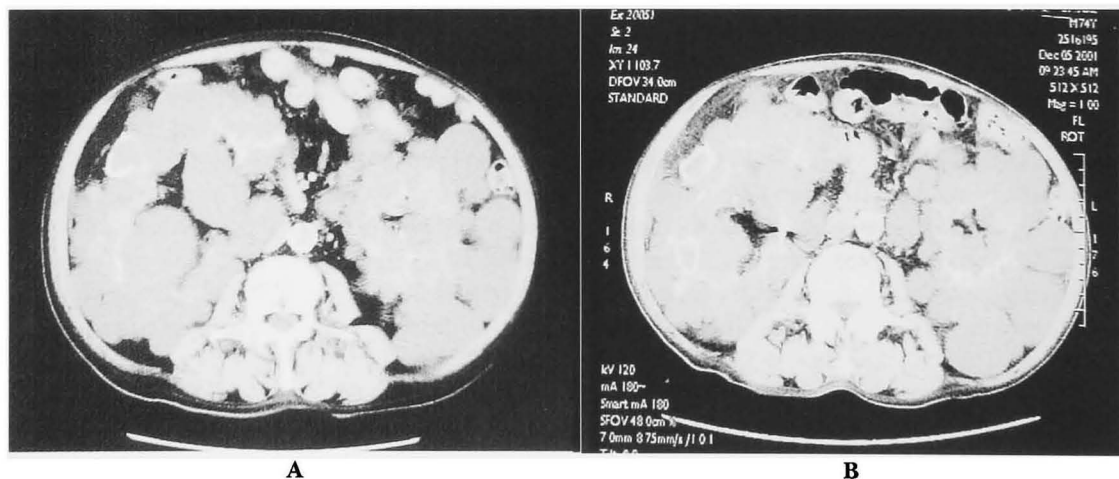


Fig. 2. Abdominal CT scan obtained in case 1. A: CT scan obtained before the first renal-TAE. B: CT scan obtained 5 months after the first renal-TAE shows a decreased cyst volume.

volume decreased from 6,410 ml to 5,058 ml (78.9%) by 3 months after the procedure. The abdominal circumference had decreased from 83 cm to 78 cm. There has been no recurrence of abdominal pain and fullness since the renal-TAE.

DISCUSSION

The treatments for enlarged kidneys include percutaneous needle cyst aspiration, followed by injection

of sclerosing agents¹⁻³), laparoscopic or open surgical cyst fenestration, and laparoscopic or open surgical nephrectomy. However, the effect of aspiration treatment is temporary, and the recurrence rate is high⁴). Complications include infection, bleeding, and arteriovenous fistula⁴). The surgical procedures can cause gastrointestinal complications⁵).

Although renal-TAE has been used mainly to treat renal bleeding or arteriovenous fistula, it has been used

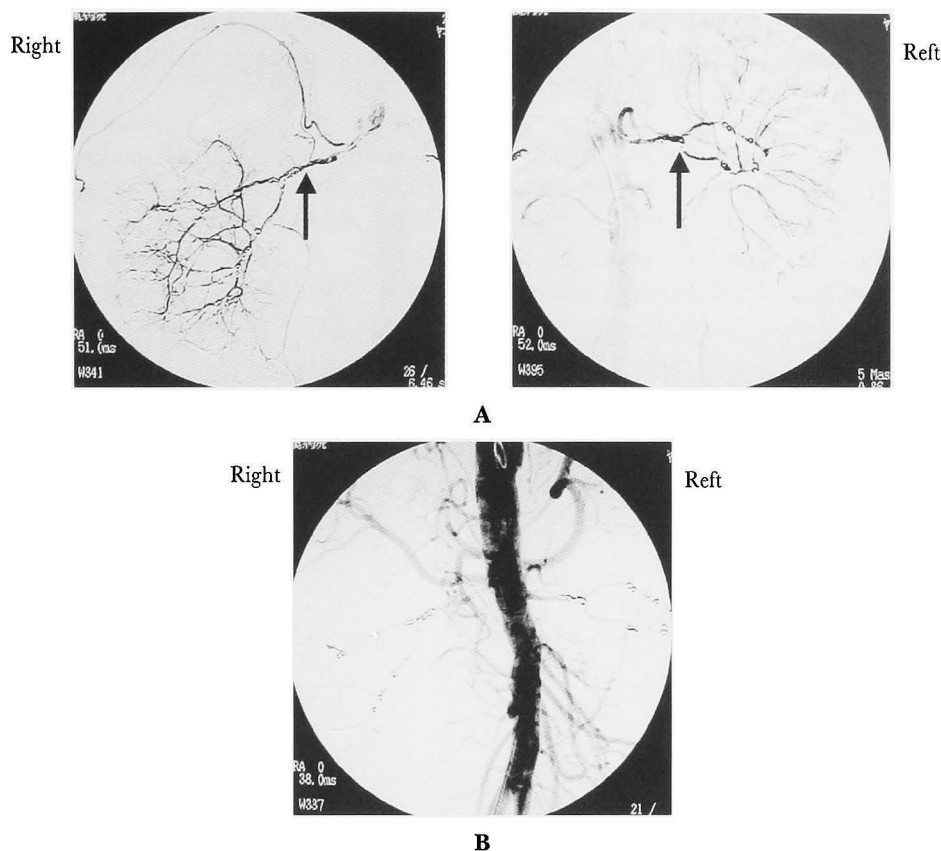


Fig. 3. Angiograms obtained in case 1 before the second renal-TAE. A: Renal angiography revealed reopening of arteries that were embolized in the first renal-TAE (arrow). B: Angiogram obtained after the second renal-TAE shows 3 microcoils placed in the right peripheral arteries and 1 coil placed in a left peripheral artery. Several gelatin sponges were placed in the peripheral arteries on both sides.

recently to treat ADPKD. Ubara⁶⁾ noted that the kidneys in patients with ADPKD were usually supplied by well-developed arteries, and they attempted renal contraction therapy. They reported the utility of renal-TAE for decreasing cyst volume⁶⁾. The clinical results were supported by results of histomorphometric analysis⁷⁾. Ubara^{8,9)} analyzed 64 patients who underwent renal-TAE and reported that abdominal circumference and body weight decreased. Despite renal arterial embolization, renovascular hypertension did not develop. Serious side effects were not reported, although fever and pain were observed in all cases^{6,8-10)}. The indications for renal-TAE are not yet established. We perform renal-TAE in patients with anuresis and treated with HD who have symptoms and who desire renal-TAE. Laparoscopic surgery is not appropriate for patients with peritonitis or who have undergone extensive abdominal surgery; therefore, renal-TAE is suitable for these patients. We must recognize that the kidney decreases in size by renal-TAE, but that the residual renal function may also decrease.

In our two cases, renal-TAE was effective, minimally invasive, and produced no serious side effects. However, long-term follow-up is necessary. We urologists should regard renal-TAE as a treatment option for patients with ADPKD.

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和文抄録

多発性嚢胞腎に対して腎動脈塞栓術を施行した2例

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多発性嚢胞腎の2例に対して、腎動脈塞栓術を施行したので報告する。患者は血液透析中の73歳、男性と65歳、女性で、腹部膨満感、腹痛、食欲不振を主訴に当科を受診した。CTにおいて多発性嚢胞腎を認めた。2人に対して腎動脈塞栓術を施行した。術後は重篤な副作用を認めず、約1カ月で症状は消失し、CTにおいても嚢胞容積の減少を認めた。しかし73歳の男性は、腎動脈塞栓術から約21カ月目に同様の症状が出

現した。腎動脈造影で塞栓部位の再開通を認めたため、2回目の腎動脈塞栓術を施行した。その後は再発徴候を認めていない。近年、多発性嚢胞腎に対して腎動脈塞栓術が行われるようになってきているが、侵襲が小さく重篤な副作用もないことから有用な治療法と考えられる。

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